UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/107,684	06/30/1998	STEVEN M. BLUMENAU	E0295/7040-R	8390

7590 10/22/2003	**EXAMINER**
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ART UNIT	PAPER NUMBER
2186	

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/107,684	BLUMENAU ET AL.
	Examiner	Art Unit
	Woo H. Choi	2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30 and 32-49* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30 and 32-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1 – 30, and 32 – 49 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Napolitano *et al.* (US Patent No. 6,219,693, hereinafter "Napolitatno") in view of Starek *et*

al. (US Patent No. 5,991,778, hereinafter "Starek").

3.   With respect to claims 1, 10 – 12, 21 – 22, and 27, Napolitano discloses a storage system

(Figure 2C, controller 228 and Figures 3 and 4, file array adapter 350 and associated disk drives

325) and for use in a computer system including a host computer, the storage system comprising:

at least one storage device having a plurality of user-accessible storage locations, the at

least one storage device including at least one disk drive (325);

a cache memory (adapter cache 375, see also Figure 4, cache manager 454); and

a controller (228), coupled to the cache memory and the at least one storage device, that

controls access to the at least one storage device from the host computer, the controller writing

data to at least two non-contiguous user-accessible storage locations on the at least one storage

device in response to a communication from the host computer, without writing data to at least

one user-accessible storage location disposed between the at least two non-contiguous storage

locations so that any data in the at least one user-accessible storage location is preserved (See

Figures 4 and 5, the controller contains a server file system and interacts with a host at a file

level through a client. See also, col. 8 lines 14 – 16, adapter is a file system controller. Figure

10 shows striping and mirroring. A write operation on a striped or mirrored logical volume

involves at least two non-contiguous storage locations and other locations between the target

locations are not affected).

However, Napolitano does not specifically disclose that the data written to the locations

is generated by the controller and is independent of any data passed from the host computer. On

the other hand, Starek discloses a system for writing data generated that is independent of any

data passed from the host computer (Starek, See col. 5, lines 27 – 47, a file deletion is done by

overwriting the file with any desired user defined or predefined pattern which is generated

independently of any data passed from the host).

It would have been obvious to one of ordinary skill in the art, having the teachings of

Napolitano and Starek before him at the time the invention was made, to use the secure file

deletion teachings of the storage system of Starek in the storage system of Napolitano, in order to

ensure that the data deleted is not retrievable to reduce security risk that is unacceptable to may

individuals and public and private organizations (Starek, col. 1, lines 23 – 27).

4.   Claims 1 – 30 and 32 – 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Napolitano *et al.* (US Patent No. 6,219,693, hereinafter "Napolitatno") in view of Starek *et al.*

(US Patent No. 5,991,778, hereinafter "Starek") further in view of Wong *et al.* (US Patent No.

5,832,525, hereinafter "Wong").

5.   With respect to claims 1, 10 – 12, 21 – 22 and 27, and Napolitano and Starek disclose all

of the limitations of claim 1, as disclosed above. In addition to Napolitano's disclosure of

writing to at least two non-contiguous storage location, Wong discloses that it is common for a

file to not reside contiguously on disk (Wong, col. 6, lines 59 – 61). Therefore, from Wong's

disclose one skilled in the art can infer that writing to at least two non-contiguous locations when

writing a file to a disk is a common occurrence.

It would have been obvious to one of ordinary skill in the art, having the teachings of

Napolitano, Starek, and Wong before him at the time the invention was made, to use disk

fragmentation teachings of the storage system of Wong in the storage system of Napolitano's

storage system as enhance with Starek's teachings, in order to maximize I/O performance and

increase the number of available clusters while reducing the disk fragmentation for more

efficient use of storage space (Wong, col. 7, lines 10 – 17).

6.   With respect to claim 28, Napolitao discloses the acts of:

         mapping the logical object to at least one storage location of the plurality of storage

locations on the at least one storage device that is assigned to store the information for the logical

object (Figures 3 and 4, files are mapped to disk drives 325 through the file array file system

410. Files are also mapped to host cache. See figure 5);

receiving, at the storage system, a communication from the host computer identifying the

at least one storage location (col.11, lines 54 – 59); and

generating, within the storage system, data that is independent of any data passed from

the host computer to the storage system and writing the generated data to the at least one storage

location in response to the act of receiving the communication (See rejections of claim 1 above

in paragraphs 3 and 5).

7.   With respect to claims 2 and 13, the controller is capable of generating the data that is

independent of any data passed from the host computer to the storage system and writing the

generated data to the at least two non-contiguous user-accessible storage locations in response to

a single command (The secure file deletion discussed above requires a single delete command).

8.   With respect to claims 3, 14 and 49, the controller is capable of generating the data that is

independent of any data passed from the host computer to the storage system having a

predetermined state and writing the generated data having the predetermined state to each of the

at least two non-contiguous user-accessible storage locations in response to the single command

(As discussed above in reference to claim 1, the generated data is predefined).

9.   With respect to claim 4, 15 and 33 – 48, the at least one storage device includes a

plurality of disk drives (Napolitano, 325), wherein the at least two non-contiguous user-

accessible storage locations are perceived by the host computer to be non-contiguous storage

locations on different disk drives (Napolitano, figure 10), and wherein the controller is capable of

writing the generated data to each of the at least two non-contiguous user-accessible storage

locations in response to a single command.

10.   With respect to claim 5, 16, 23, 24, 25 and 26, the controller is capable of writing the

generated data to only each of the at least two non-contiguous user-accessible storage locations

in response to the single command (File deletion only affect the area occupied by the deleted

file).

11.   With respect to claim 6, 17, the at least one storage device includes a plurality of disk

drives, wherein the at least two non-contiguous user accessible storage locations are on different

disk drives (Napolitano, Figure 10), and wherein the controller is capable of writing the

generated data to each of the at least two non-contiguous user-accessible storage locations in

response to the single command (See rejections of claims 1 and 2).

12.   With respect to claim 8, 19, the at least two non-contiguous user-accessible storage

locations correspond to a logical object defined by the computer system, and wherein the

controller is capable of writing the generated data to each user-accessible storage location

corresponding to the logical object in response to the single command (The storage locations

correspond to a file which is a logical object defined by the computer system).

13.   With respect to claim 9, 20, the controller is capable of generating the data that is

independent of any data passed from the host computer to the storage system having a

predetermined state and writing the generated data having the predetermined state to each user-

accessible storage location corresponding to the logical object in response to the single command

(See rejections of claims 1, 2, and 3 above).

14.   With respect to claims 29, 30, 32, the host computer includes at least one mapping layer,

and wherein the act of mapping includes an act of mapping the logical object through the at least

one mapping layer on the host computer to the at least one storage location on the at least one

storage device, wherein the at least one mapping layer includes a plurality of mapping layers

including at least one of a file system mapping layer, a logical volume mapping layer, and a

database mapping layer, and wherein the act of mapping includes an act of mapping the logical

object through at least one of the file system mapping layer, the logical volume mapping layer,

and the database mapping layer on the host computer to the at least one storage location on the at

least one storage device (Napolitano, figure 4, see also discussion of figure 4 in col. 6, line 65 –

col. 8, line 42)

16.   With respect to claims 7 and 18, the single command separately identifies the at least two

non-contiguous user-accessible storage locations (MS-DOS supports multiple file deletion with a

Delete single command. Napolitano, Starek, Rao, and Wong all support MS-DOS and Windows

family of operating system, all of which support MS-DOS Delete command).

17.   Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Napolitano and Starek as applied to claims 1 and 12, and also over Napolitano, Starek, and

Wong as applied to claims 1 and 12 as discussed above, and further in view of the MS-DOS

command (MS-DOS User's Reference, Microsoft Corporation, 1987, pp. 56).

The Napolitano/Starek and Napolitano/Starek/Wong combinations do not explicitly

describe a single command separately identifying two storage locations. On the other hand, as

explained in the MS-DOS User's Reference, the MS-DOS delete command could be used to

delete "more than one file at a time" by allowing for multiple files to be specified for deletion via

a single command.

It would have been obvious to one of ordinary skill in the art, having the teachings of

Napolitano, Starek, Wong, and Microsoft before him at the time the invention was made, to use

the multiple file deletion with a single teachings of Microsoft in the system of Napolitano and

Starek and in the system of Napolitano, Starek and Wong, in order to be able to delete multiple

files with a single delete command to make the delete command more flexible and easier to use

and also so that the operating system supported by the system is compatible with the Microsoft

versions of the DOS/Windows family of Operating Systems.

Response to Arguments

18.   Applicant's arguments with respect to claims 1 – 49 have been considered but are moot in

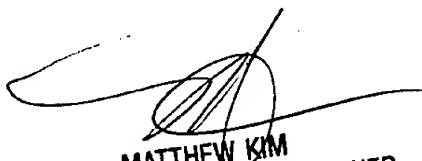view of the new ground(s) of rejection.

Conclusion

19.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Woo H. Choi whose telephone number is (703) 305-3845. The

examiner can normally be reached on M-F, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matt Kim can be reached on (703) 305-3821. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

whc/
whc
October 20, 2003

MATTHEW KIM
SUPERVISORY PATENT EXAMINER
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